Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 02:34 PM GMT

PDB ID	:	3ZUL
Title	:	PADRON ON (FLUORESCENT) ICIS INTERMEDIATE STATE
Authors	:	Faro, A.R.; Carpentier, P.; Bougeois, D.
Deposited on	:	2011-07-19
Resolution	:	2.30 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

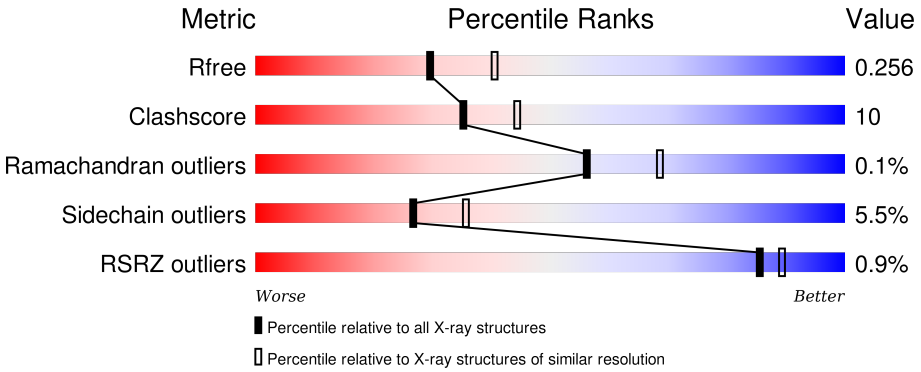
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	3852 (2.30-2.30)
Clashscore	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (2.30-2.30)
RSRZ outliers	91569	3857 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	221	79% 17%
1	B	221	79% 16%
1	C	221	2% 79% 17%
1	D	221	% 76% 19%
1	E	221	% 76% 20%

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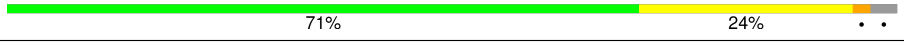
Mol	Chain	Length	Quality of chain
1	F	221	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 11166 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called FLUORESCENT PROTEIN DRONPA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	214	Total	C	N	O	S	11	6	0
			1770	1130	302	328	10			
1	B	214	Total	C	N	O	S	0	2	0
			1733	1107	293	323	10			
1	C	216	Total	C	N	O	S	0	6	0
			1776	1133	302	331	10			
1	D	214	Total	C	N	O	S	0	4	0
			1751	1119	296	326	10			
1	E	214	Total	C	N	O	S	0	12	0
			1813	1153	310	339	11			
1	F	214	Total	C	N	O	S	0	11	0
			1810	1153	309	337	11			

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	59	MET	THR	CONFLICT	UNP Q5TLG6
A	63	GYC	CYS	CHROMOPHORE	UNP P42212
A	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
A	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
A	94	ILE	ASN	CONFLICT	UNP Q5TLG6
A	141	LEU	PRO	CONFLICT	UNP Q5TLG6
A	155	SER	GLY	CONFLICT	UNP Q5TLG6
A	159	TYR	MET	CONFLICT	UNP Q5TLG6
A	190	SER	PHE	CONFLICT	UNP Q5TLG6
B	59	MET	THR	CONFLICT	UNP Q5TLG6
B	63	GYC	CYS	CHROMOPHORE	UNP P42212
B	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
B	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
B	94	ILE	ASN	CONFLICT	UNP Q5TLG6
B	141	LEU	PRO	CONFLICT	UNP Q5TLG6
B	155	SER	GLY	CONFLICT	UNP Q5TLG6
B	159	TYR	MET	CONFLICT	UNP Q5TLG6

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Chain	Residue	Modelled	Actual	Comment	Reference
B	190	SER	PHE	CONFLICT	UNP Q5TLG6
C	59	MET	THR	CONFLICT	UNP Q5TLG6
C	63	GYC	CYS	CHROMOPHORE	UNP P42212
C	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
C	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
C	94	ILE	ASN	CONFLICT	UNP Q5TLG6
C	141	LEU	PRO	CONFLICT	UNP Q5TLG6
C	155	SER	GLY	CONFLICT	UNP Q5TLG6
C	159	TYR	MET	CONFLICT	UNP Q5TLG6
C	190	SER	PHE	CONFLICT	UNP Q5TLG6
D	59	MET	THR	CONFLICT	UNP Q5TLG6
D	63	GYC	CYS	CHROMOPHORE	UNP P42212
D	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
D	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
D	94	ILE	ASN	CONFLICT	UNP Q5TLG6
D	141	LEU	PRO	CONFLICT	UNP Q5TLG6
D	155	SER	GLY	CONFLICT	UNP Q5TLG6
D	159	TYR	MET	CONFLICT	UNP Q5TLG6
D	190	SER	PHE	CONFLICT	UNP Q5TLG6
E	59	MET	THR	CONFLICT	UNP Q5TLG6
E	63	GYC	CYS	CHROMOPHORE	UNP P42212
E	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
E	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
E	94	ILE	ASN	CONFLICT	UNP Q5TLG6
E	141	LEU	PRO	CONFLICT	UNP Q5TLG6
E	155	SER	GLY	CONFLICT	UNP Q5TLG6
E	159	TYR	MET	CONFLICT	UNP Q5TLG6
E	190	SER	PHE	CONFLICT	UNP Q5TLG6
F	59	MET	THR	CONFLICT	UNP Q5TLG6
F	63	GYC	CYS	CHROMOPHORE	UNP P42212
F	63	GYC	TYR	CHROMOPHORE	UNP Q5TLG6
F	63	GYC	GLY	CHROMOPHORE	UNP Q5TLG6
F	94	ILE	ASN	CONFLICT	UNP Q5TLG6
F	141	LEU	PRO	CONFLICT	UNP Q5TLG6
F	155	SER	GLY	CONFLICT	UNP Q5TLG6
F	159	TYR	MET	CONFLICT	UNP Q5TLG6
F	190	SER	PHE	CONFLICT	UNP Q5TLG6

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	100	Total O 101 101	0	1

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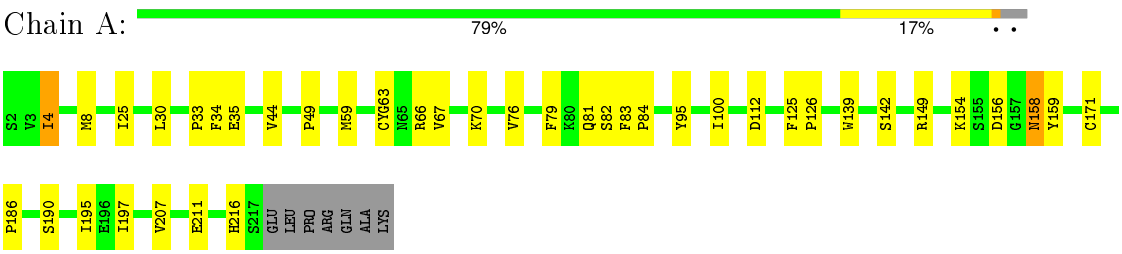
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	74	Total O 74 74	0	0
2	C	100	Total O 100 100	0	0
2	D	106	Total O 106 106	0	0
2	E	64	Total O 64 64	0	0
2	F	68	Total O 68 68	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

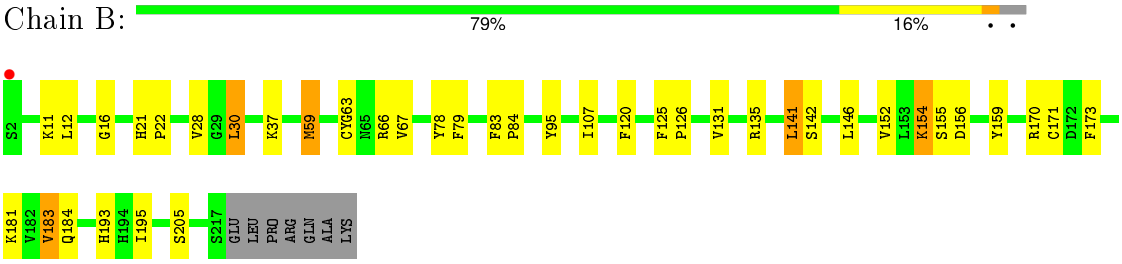
- Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain A:



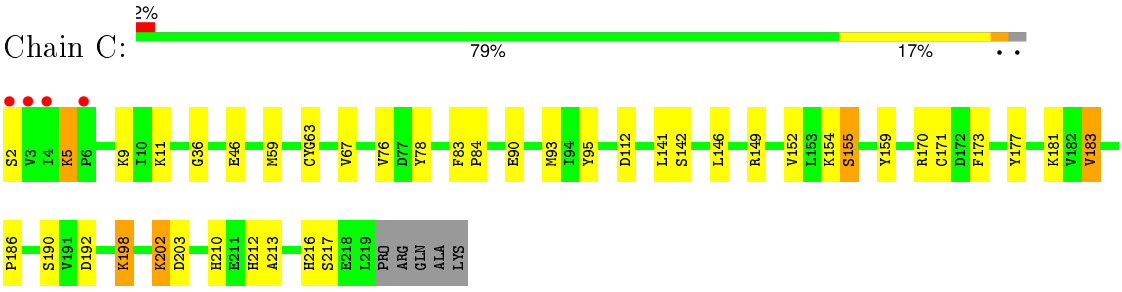
- Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain B:



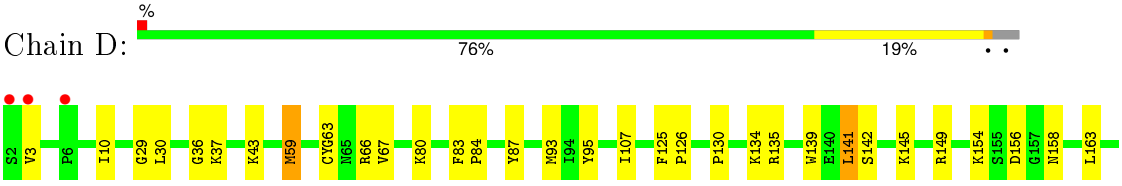
- Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain C:



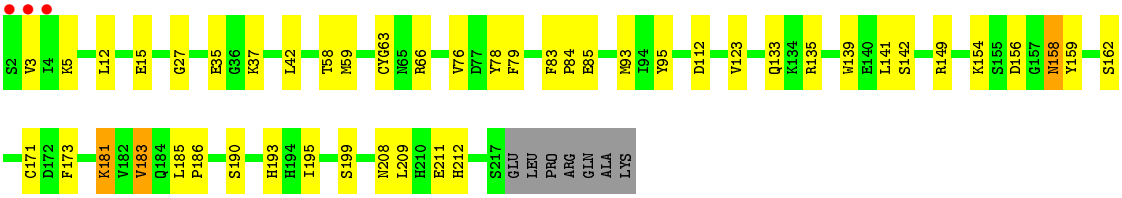
- Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain D:



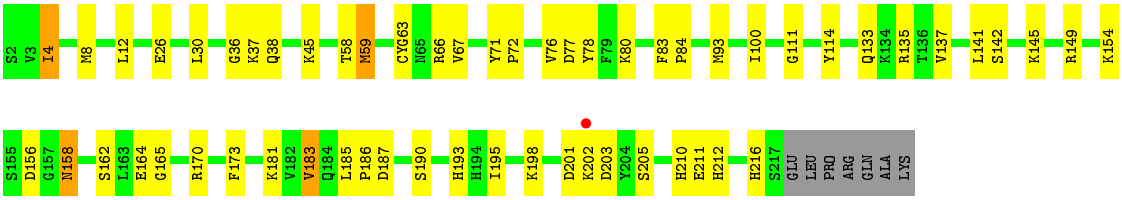
• Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain E:



• Molecule 1: FLUORESCENT PROTEIN DRONPA

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	108.97Å 181.38Å 72.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.52 – 2.30 46.52 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.6 (46.52-2.30) 99.6 (46.52-2.30)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.62 (at 2.29Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.204 , 0.256 0.205 , 0.256	Depositor DCC
R_{free} test set	2000 reflections (3.19%)	DCC
Wilson B-factor (Å^2)	22.7	Xtriage
Anisotropy	0.460	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 29.5	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.32$	Xtriage
Outliers	0 of 64690 reflections	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	11166	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.01% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GYC

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.48	0/1794	0.55	0/2419
1	B	0.44	0/1757	0.54	0/2372
1	C	0.48	0/1800	0.58	0/2428
1	D	0.46	0/1775	0.55	0/2395
1	E	0.41	0/1837	0.51	0/2473
1	F	0.42	0/1834	0.55	0/2470
All	All	0.45	0/10797	0.55	0/14557

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1770	0	1697	34	0
1	B	1733	0	1650	28	1
1	C	1776	0	1693	34	1
1	D	1751	0	1675	33	1
1	E	1813	0	1730	43	1
1	F	1810	0	1728	36	1
2	A	101	0	0	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	74	0	0	7	0
2	C	100	0	0	0	0
2	D	106	0	0	5	0
2	E	64	0	0	9	0
2	F	68	0	0	6	0
All	All	11166	0	10173	203	3

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

All (203) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:133:GLN:OE1	1:E:135[A]:ARG:NH1	2.05	0.89
1:A:158:ASN:H	1:A:158:ASN:HD22	1.15	0.89
1:E:59[B]:MET:HG3	2:E:2020:HOH:O	1.72	0.88
1:F:133:GLN:OE1	1:F:135[B]:ARG:NH2	2.09	0.85
1:B:59:MET:HE2	1:B:173:PHE:CZ	2.14	0.83
1:F:4:ILE:HD13	2:F:2002:HOH:O	1.78	0.82
1:A:149:ARG:HB3	1:A:154:LYS:HD2	1.63	0.81
1:E:58:THR:O	2:E:2025:HOH:O	2.00	0.80
1:A:216[B]:HIS:NE2	2:A:2094:HOH:O	2.14	0.80
1:E:158:ASN:ND2	1:E:158:ASN:O	2.16	0.78
1:D:59:MET:HG3	2:D:2027:HOH:O	1.83	0.77
1:A:81:GLN:NE2	2:A:2047:HOH:O	2.17	0.77
1:A:8:MET:HE2	1:A:112:ASP:HB2	1.70	0.74
1:E:186:PRO:HB3	2:E:2029:HOH:O	1.87	0.73
1:A:190:SER:HB3	2:A:2094:HOH:O	1.89	0.73
1:E:37[B]:LYS:HD3	1:E:212:HIS:HB3	1.70	0.73
1:B:78:TYR:CE1	1:B:183[A]:VAL:HG23	2.25	0.72
1:B:63:GYC:HD2	1:B:63:GYC:N2	2.03	0.72
1:A:63:GYC:N2	1:A:63:GYC:HD2	2.06	0.71
1:F:59[A]:MET:HG3	2:F:2023:HOH:O	1.91	0.71
1:D:205[A]:SER:OG	2:D:2101:HOH:O	1.98	0.71
1:C:2:SER:O	1:C:5[B]:LYS:NZ	2.24	0.71
1:D:59:MET:HE3	1:D:139:TRP:CD2	2.26	0.71
1:F:37[B]:LYS:HE3	2:F:2012:HOH:O	1.89	0.70
1:F:63:GYC:HD1	1:F:63:GYC:N2	2.05	0.70
1:D:59:MET:HE2	1:D:139:TRP:CD1	2.27	0.69
1:B:154:LYS:HE3	2:B:2063:HOH:O	1.90	0.69
1:B:141:LEU:HD23	1:B:193:HIS:O	1.92	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:158:ASN:N	1:A:158:ASN:HD22	1.90	0.68
1:D:63:GYC:HD1	1:D:63:GYC:N2	2.09	0.68
2:B:2051:HOH:O	1:C:46:GLU:HG3	1.94	0.67
1:E:76:VAL:O	2:E:2029:HOH:O	2.12	0.67
1:C:63:GYC:N2	1:C:63:GYC:HD1	2.10	0.66
1:A:158:ASN:ND2	2:A:2078:HOH:O	2.27	0.66
1:C:59:MET:HG2	1:C:63:GYC:CD1	2.25	0.66
1:B:107:ILE:O	2:B:2033:HOH:O	2.14	0.66
1:E:35:GLU:HB3	1:E:37[A]:LYS:NZ	2.12	0.65
1:D:158:ASN:OD1	2:D:2080:HOH:O	2.13	0.65
1:F:216:HIS:NE2	2:F:2064:HOH:O	2.28	0.64
1:E:5:LYS:HD3	1:E:112[B]:ASP:CG	2.18	0.64
1:F:158:ASN:ND2	1:F:158:ASN:O	2.31	0.63
1:E:78:TYR:HE2	2:E:2061:HOH:O	1.82	0.63
1:A:4:ILE:HG23	2:A:2002:HOH:O	1.97	0.62
1:C:59:MET:HE2	1:C:63:GYC:CZ	2.30	0.62
1:F:149:ARG:HB3	1:F:154:LYS:HD2	1.82	0.62
1:C:142[A]:SER:HB2	1:C:159:TYR:CE1	2.34	0.62
1:E:5:LYS:HD3	1:E:112[B]:ASP:OD1	2.01	0.61
1:E:209:LEU:HD21	2:E:2025:HOH:O	2.01	0.61
1:F:26:GLU:HG3	1:F:45:LYS:HG3	1.82	0.60
1:E:63:GYC:N2	1:E:63:GYC:HD2	2.15	0.60
1:C:190:SER:HB3	1:C:216[B]:HIS:HD2	1.65	0.60
1:D:59:MET:CE	1:D:139:TRP:CG	2.85	0.60
1:E:63:GYC:HB11	2:E:2025:HOH:O	2.01	0.59
1:E:149:ARG:HB3	1:E:154:LYS:HD2	1.84	0.59
1:C:59:MET:HE2	1:C:63:GYC:OH	2.02	0.59
1:B:59:MET:CE	1:B:173:PHE:CZ	2.85	0.59
1:A:158:ASN:H	1:A:158:ASN:ND2	1.93	0.59
1:F:78:TYR:CE1	1:F:183:VAL:HG23	2.38	0.58
1:E:142[A]:SER:HB2	1:E:159:TYR:CE1	2.39	0.58
1:C:83:PHE:HB3	1:C:84:PRO:HA	1.86	0.57
1:A:59:MET:HE1	1:A:139:TRP:CD2	2.39	0.57
1:A:63:GYC:HE2	1:A:195:ILE:HB	1.87	0.57
1:B:142:SER:HB3	1:B:159:TYR:CE1	2.40	0.57
1:B:83:PHE:HB3	1:B:84:PRO:HA	1.86	0.56
1:C:78:TYR:CE1	1:C:183:VAL:HG22	2.40	0.56
1:E:141:LEU:HD12	1:E:193:HIS:O	2.06	0.55
1:F:76:VAL:HB	1:F:186:PRO:HA	1.88	0.55
1:F:37[B]:LYS:HG3	1:F:38:GLN:N	2.20	0.55
1:D:93:MET:HG2	1:D:173:PHE:CE1	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:59:MET:HG2	1:C:63:GYC:CE1	2.37	0.54
1:F:198:LYS:HG3	1:F:210:HIS:CD2	2.42	0.54
1:F:63:GYC:HE1	1:F:195:ILE:HB	1.90	0.54
1:E:59[A]:MET:HG2	1:E:63:GYC:CE2	2.37	0.54
1:B:66:ARG:HG2	1:B:79:PHE:CE2	2.43	0.54
1:D:10:ILE:N	1:D:29:GLY:O	2.39	0.54
1:C:149:ARG:HB3	1:C:154[B]:LYS:HD3	1.89	0.53
1:A:4:ILE:HD12	1:A:34:PHE:CZ	2.43	0.53
1:A:59:MET:HG2	1:A:63:GYC:CD2	2.38	0.53
1:D:59:MET:CE	1:D:139:TRP:CD2	2.92	0.53
1:E:83:PHE:HB3	1:E:84:PRO:HA	1.91	0.53
1:E:195:ILE:HD11	2:E:2025:HOH:O	2.09	0.52
1:C:142[B]:SER:HB3	1:C:159:TYR:CE1	2.45	0.52
1:D:30:LEU:HD12	1:D:30:LEU:O	2.10	0.52
1:B:63:GYC:HB2	1:B:66:ARG:NH2	2.25	0.52
1:D:135:ARG:HG3	1:D:135:ARG:HH11	1.74	0.52
1:F:83:PHE:HB3	1:F:84:PRO:HA	1.91	0.52
1:D:83:PHE:HB3	1:D:84:PRO:HA	1.92	0.51
1:A:83:PHE:HB3	1:A:84:PRO:HA	1.92	0.51
1:B:95:TYR:CD2	1:B:171:CYS:HB2	2.45	0.51
1:F:181:LYS:HG2	2:F:2035:HOH:O	2.11	0.51
1:C:63:GYC:OH	1:C:142[A]:SER:OG	2.21	0.51
1:B:63:GYC:HB2	1:B:66:ARG:HH22	1.75	0.51
1:A:197:ILE:HG23	1:A:207:VAL:HG13	1.93	0.51
1:E:142[B]:SER:HB3	1:E:159:TYR:CE1	2.46	0.50
1:B:78:TYR:CE1	1:B:183[A]:VAL:CG2	2.95	0.50
1:D:36:GLY:O	1:D:212:HIS:HA	2.11	0.50
1:C:95:TYR:CD1	1:C:171:CYS:HB2	2.46	0.50
1:D:80:LYS:NZ	2:D:2035:HOH:O	2.36	0.50
1:E:35:GLU:HB3	1:E:37[A]:LYS:HZ1	1.76	0.49
1:C:198:LYS:HG3	1:C:210:HIS:CD2	2.47	0.49
1:E:59[A]:MET:HE1	1:E:139:TRP:CD2	2.47	0.49
1:A:70:LYS:O	2:A:2037:HOH:O	2.20	0.49
1:C:2:SER:N	1:F:165:GLY:HA2	2.27	0.49
1:B:12:LEU:HD12	1:B:12:LEU:C	2.33	0.49
1:D:141[A]:LEU:HD23	1:D:141[A]:LEU:N	2.28	0.49
1:C:202:LYS:HD3	1:C:203:ASP:N	2.27	0.48
1:C:76:VAL:HB	1:C:186:PRO:HA	1.94	0.48
1:E:95:TYR:CD2	1:E:171:CYS:HB2	2.47	0.48
1:E:59[B]:MET:HE1	1:E:159:TYR:CD2	2.48	0.48
1:C:142[A]:SER:HB2	1:C:159:TYR:CD1	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:12:LEU:HD12	1:F:12:LEU:C	2.34	0.47
1:B:59:MET:HE1	1:B:159:TYR:CD2	2.49	0.47
1:C:93:MET:HG2	1:C:173:PHE:CE1	2.50	0.47
1:F:142:SER:HB2	1:F:193:HIS:HB2	1.97	0.47
1:E:199:SER:OG	1:E:208:ASN:HB3	2.14	0.47
1:E:78:TYR:CE1	1:E:183:VAL:HG22	2.50	0.47
1:F:158:ASN:HB2	1:F:170:ARG:CZ	2.45	0.46
1:F:137:VAL:HB	1:F:162[B]:SER:OG	2.15	0.46
1:C:5[B]:LYS:NZ	1:F:164:GLU:HG2	2.30	0.46
1:C:190:SER:HB3	1:C:216[B]:HIS:CD2	2.48	0.46
1:A:8:MET:CE	1:A:112:ASP:HB2	2.42	0.46
1:E:27:GLY:HA3	1:E:42:LEU:HD23	1.97	0.46
1:D:149:ARG:HB3	1:D:154:LYS:HD2	1.98	0.46
1:D:163:LEU:HD21	1:D:169:TYR:HB2	1.98	0.46
1:A:142:SER:HB3	1:A:159:TYR:CE1	2.50	0.46
1:F:77:ASP:OD2	1:F:80:LYS:HG3	2.15	0.46
1:C:90:GLU:HB3	1:E:123:VAL:HB	1.96	0.46
1:E:142[A]:SER:OG	1:E:193:HIS:HB2	2.16	0.46
1:B:59:MET:CG	2:B:2017:HOH:O	2.64	0.46
1:E:63:GYC:CB1	2:E:2025:HOH:O	2.62	0.46
1:D:141[A]:LEU:HD23	1:D:141[A]:LEU:H	1.81	0.46
1:F:141:LEU:HD13	1:F:142:SER:N	2.31	0.45
1:D:181:LYS:HE2	1:D:183:VAL:HG22	1.98	0.45
1:E:66:ARG:HG2	1:E:79:PHE:CE2	2.51	0.45
1:F:158:ASN:HB2	1:F:170:ARG:NH1	2.32	0.45
1:F:93:MET:HG2	1:F:173:PHE:CE1	2.51	0.45
1:C:216[B]:HIS:CG	1:C:217:SER:N	2.84	0.45
1:C:36:GLY:O	1:C:212:HIS:HA	2.17	0.45
1:F:201:ASP:C	1:F:203[A]:ASP:H	2.18	0.45
1:F:8:MET:HE3	1:F:114:TYR:CE2	2.52	0.45
1:A:8:MET:HG3	1:A:33:PRO:HG2	1.97	0.45
1:D:63:GYC:HB2	1:D:66:ARG:NH2	2.32	0.45
1:E:112[A]:ASP:N	1:E:112[A]:ASP:OD1	2.50	0.45
1:A:59:MET:HG2	1:A:63:GYC:CE2	2.46	0.44
1:D:59:MET:HE3	1:D:139:TRP:CG	2.50	0.44
1:D:211:GLU:HG2	1:D:212:HIS:N	2.31	0.44
1:F:36:GLY:O	1:F:212[B]:HIS:HA	2.18	0.44
1:A:49:PRO:HD3	2:A:2021:HOH:O	2.17	0.44
1:B:125:PHE:CE1	1:B:131:VAL:HG21	2.53	0.44
1:E:142[A]:SER:HB2	1:E:159:TYR:CD1	2.52	0.44
1:B:183[B]:VAL:HG12	1:B:184:GLN:O	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:21:HIS:HA	1:B:22:PRO:HD3	1.73	0.44
1:C:198:LYS:HB3	1:C:198:LYS:HE3	1.69	0.44
1:F:185:LEU:HA	1:F:186:PRO:HD3	1.83	0.44
1:C:192:ASP:O	1:C:213:ALA:HA	2.18	0.44
1:C:155:SER:HB3	1:C:177:TYR:HE2	1.83	0.43
1:A:95:TYR:CD2	1:A:171:CYS:HB2	2.53	0.43
1:E:63:GYC:HB12	1:E:211:GLU:OE1	2.18	0.43
1:C:5[A]:LYS:HB3	1:C:5[A]:LYS:HE2	1.85	0.43
1:D:130:PRO:HA	1:D:135:ARG:HG2	2.00	0.43
1:D:95:TYR:CD2	1:D:171:CYS:HB2	2.53	0.43
1:D:145:LYS:HG3	1:D:188:TYR:OH	2.18	0.43
1:A:35:GLU:HG3	2:A:2011:HOH:O	2.18	0.43
1:D:125:PHE:HA	1:D:126:PRO:HD3	1.89	0.43
1:A:76:VAL:HB	1:A:186:PRO:HA	2.01	0.43
1:B:63:GYC:HE2	1:B:195:ILE:HB	2.00	0.43
1:E:12:LEU:C	1:E:12:LEU:HD12	2.39	0.43
1:A:25:ILE:HG12	1:A:44:VAL:HG22	2.01	0.43
1:F:63:GYC:HB12	1:F:211:GLU:OE1	2.19	0.42
1:A:156:ASP:HB2	2:A:2079:HOH:O	2.18	0.42
1:E:185:LEU:HA	1:E:186:PRO:HD3	1.77	0.42
1:D:59:MET:HE2	1:D:139:TRP:NE1	2.34	0.42
1:C:5[B]:LYS:HZ3	1:F:164:GLU:HG2	1.84	0.42
1:A:67:VAL:HG21	1:A:83:PHE:CE2	2.55	0.42
1:A:125:PHE:HA	1:A:126:PRO:HD3	1.89	0.42
1:D:87:TYR:CZ	1:D:107:ILE:HD12	2.55	0.42
1:F:71:TYR:HA	1:F:72:PRO:HD3	1.93	0.42
1:E:93:MET:HG2	1:E:173:PHE:CZ	2.55	0.42
1:C:146:LEU:HG	1:C:155:SER:HB2	2.02	0.42
1:B:146:LEU:HG	1:B:155:SER:HB3	2.00	0.41
1:F:58:THR:HG21	2:F:2025:HOH:O	2.20	0.41
1:D:212:HIS:HB2	2:D:2014:HOH:O	2.19	0.41
1:F:201:ASP:O	1:F:203[A]:ASP:N	2.53	0.41
1:A:63:GYC:HB12	1:A:211:GLU:OE1	2.21	0.41
1:C:202:LYS:HD3	1:C:203:ASP:HB3	2.01	0.41
1:D:142:SER:HB2	1:D:193:HIS:HB2	2.03	0.41
1:D:3:VAL:HG11	1:D:84:PRO:HB3	2.02	0.41
1:B:135:ARG:NH2	2:B:2054:HOH:O	2.52	0.41
1:A:49:PRO:CD	2:A:2021:HOH:O	2.67	0.41
1:A:158:ASN:N	1:A:158:ASN:ND2	2.60	0.41
1:B:142:SER:HB2	1:B:193:HIS:HB2	2.02	0.41
1:E:59[B]:MET:HE3	1:E:173:PHE:CE2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:93:MET:HG2	1:D:173:PHE:CZ	2.56	0.40
1:B:125:PHE:HA	1:B:126:PRO:HD3	1.85	0.40
1:B:16:GLY:HA3	1:B:120:PHE:O	2.21	0.40
1:A:66:ARG:HB3	1:A:79:PHE:CG	2.56	0.40
1:B:30:LEU:HD13	2:B:2002:HOH:O	2.20	0.40
1:E:59[B]:MET:CE	1:E:159:TYR:CD2	3.04	0.40
1:B:59:MET:HG3	2:B:2017:HOH:O	2.20	0.40
1:C:5[A]:LYS:HD3	1:F:164:GLU:OE2	2.21	0.40
1:E:85:GLU:OE1	1:E:181[A]:LYS:NZ	2.52	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:156:ASP:OD2	1:F:170:ARG:NE[4_455]	2.10	0.10
1:B:156:ASP:OD2	1:B:170:ARG:NE[2_555]	2.15	0.05
1:C:170:ARG:NE	1:D:156:ASP:OD2[4_455]	2.18	0.02

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	217/221 (98%)	214 (99%)	3 (1%)	0	100	100
1	B	213/221 (96%)	211 (99%)	2 (1%)	0	100	100
1	C	219/221 (99%)	214 (98%)	5 (2%)	0	100	100
1	D	215/221 (97%)	214 (100%)	1 (0%)	0	100	100
1	E	223/221 (101%)	220 (99%)	3 (1%)	0	100	100
1	F	222/221 (100%)	217 (98%)	4 (2%)	1 (0%)	34	41
All	All	1309/1326 (99%)	1290 (98%)	18 (1%)	1 (0%)	56	68

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	111	GLY

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	187/189 (99%)	182 (97%)	5 (3%)	52	70
1	B	182/189 (96%)	169 (93%)	13 (7%)	18	23
1	C	186/189 (98%)	173 (93%)	13 (7%)	19	23
1	D	185/189 (98%)	174 (94%)	11 (6%)	24	32
1	E	192/189 (102%)	182 (95%)	10 (5%)	29	38
1	F	191/189 (101%)	176 (92%)	15 (8%)	15	19
All	All	1123/1134 (99%)	1056 (94%)	67 (6%)	27	31

All (67) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	ILE
1	A	30	LEU
1	A	82	SER
1	A	100	ILE
1	A	158	ASN
1	B	11	LYS
1	B	28	VAL
1	B	30	LEU
1	B	37	LYS
1	B	59	MET
1	B	67	VAL
1	B	141	LEU
1	B	152	VAL
1	B	154	LYS
1	B	181	LYS
1	B	183[A]	VAL

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Mol	Chain	Res	Type
1	B	183[B]	VAL
1	B	205	SER
1	C	5[A]	LYS
1	C	5[B]	LYS
1	C	9	LYS
1	C	11	LYS
1	C	67	VAL
1	C	112	ASP
1	C	141	LEU
1	C	152	VAL
1	C	155	SER
1	C	181	LYS
1	C	183	VAL
1	C	198	LYS
1	C	202	LYS
1	D	37	LYS
1	D	43	LYS
1	D	59	MET
1	D	67	VAL
1	D	134	LYS
1	D	141[A]	LEU
1	D	141[B]	LEU
1	D	181	LYS
1	D	187	ASP
1	D	190	SER
1	D	203	ASP
1	E	3	VAL
1	E	15	GLU
1	E	158	ASN
1	E	162[A]	SER
1	E	162[B]	SER
1	E	181[A]	LYS
1	E	181[B]	LYS
1	E	183	VAL
1	E	190[A]	SER
1	E	190[B]	SER
1	F	4	ILE
1	F	30	LEU
1	F	59[A]	MET
1	F	59[B]	MET
1	F	66	ARG
1	F	67	VAL

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Mol	Chain	Res	Type
1	F	100	ILE
1	F	145	LYS
1	F	156	ASP
1	F	158	ASN
1	F	183	VAL
1	F	187	ASP
1	F	190	SER
1	F	202	LYS
1	F	205	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	81	GLN
1	A	158	ASN
1	F	38	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

6 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	GYC	A	63	1	22,22,23	4.33	6 (27%)	27,30,32	3.93	7 (25%)
1	GYC	B	63	1	22,22,23	4.39	6 (27%)	27,30,32	4.29	4 (14%)
1	GYC	C	63	1	22,22,23	4.38	6 (27%)	27,30,32	4.20	4 (14%)
1	GYC	D	63	1	22,22,23	4.36	6 (27%)	27,30,32	3.84	8 (29%)
1	GYC	E	63	1	22,22,23	4.43	6 (27%)	27,30,32	3.92	5 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	GYC	F	63	1	22,22,23	4.34	6 (27%)	27,30,32	4.20	7 (25%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	GYC	A	63	1	-	0/8/29/30	0/2/2/2
1	GYC	B	63	1	-	0/8/29/30	0/2/2/2
1	GYC	C	63	1	-	0/8/29/30	0/2/2/2
1	GYC	D	63	1	-	0/8/29/30	0/2/2/2
1	GYC	E	63	1	-	0/8/29/30	0/2/2/2
1	GYC	F	63	1	-	0/8/29/30	0/2/2/2

All (36) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	63	GYC	CA2-C2	-10.74	1.36	1.48
1	C	63	GYC	CA2-C2	-10.66	1.37	1.48
1	F	63	GYC	CA2-C2	-10.60	1.37	1.48
1	E	63	GYC	CA2-C2	-10.31	1.37	1.48
1	D	63	GYC	CA2-C2	-10.28	1.37	1.48
1	A	63	GYC	CA2-C2	-10.23	1.37	1.48
1	C	63	GYC	OH-CZ	-4.66	1.25	1.37
1	D	63	GYC	OH-CZ	-4.64	1.26	1.37
1	B	63	GYC	OH-CZ	-4.60	1.26	1.37
1	F	63	GYC	OH-CZ	-4.53	1.26	1.37
1	A	63	GYC	OH-CZ	-4.49	1.26	1.37
1	E	63	GYC	OH-CZ	-4.30	1.26	1.37
1	D	63	GYC	C2-N3	-3.38	1.32	1.39
1	E	63	GYC	C2-N3	-3.32	1.32	1.39
1	A	63	GYC	C2-N3	-3.31	1.32	1.39
1	B	63	GYC	C2-N3	-3.14	1.33	1.39
1	C	63	GYC	C2-N3	-3.01	1.33	1.39
1	F	63	GYC	C2-N3	-2.85	1.33	1.39
1	B	63	GYC	O2-C2	2.56	1.28	1.23
1	D	63	GYC	O2-C2	2.61	1.28	1.23
1	F	63	GYC	O2-C2	2.76	1.29	1.23
1	E	63	GYC	O2-C2	2.77	1.29	1.23
1	A	63	GYC	O2-C2	2.81	1.29	1.23
1	C	63	GYC	O2-C2	2.82	1.29	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	63	GYC	C1-N2	3.71	1.38	1.32
1	F	63	GYC	C1-N2	3.90	1.38	1.32
1	C	63	GYC	C1-N2	4.04	1.38	1.32
1	A	63	GYC	C1-N2	4.12	1.38	1.32
1	B	63	GYC	C1-N2	4.37	1.39	1.32
1	D	63	GYC	C1-N2	4.37	1.39	1.32
1	F	63	GYC	CB2-CA2	15.58	1.48	1.35
1	B	63	GYC	CB2-CA2	15.66	1.49	1.35
1	A	63	GYC	CB2-CA2	15.70	1.49	1.35
1	D	63	GYC	CB2-CA2	15.71	1.49	1.35
1	C	63	GYC	CB2-CA2	15.73	1.49	1.35
1	E	63	GYC	CB2-CA2	16.26	1.49	1.35

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	63	GYC	O2-C2-CA2	-13.63	123.58	130.95
1	C	63	GYC	O2-C2-CA2	-13.35	123.74	130.95
1	F	63	GYC	O2-C2-CA2	-12.35	124.28	130.95
1	E	63	GYC	O2-C2-CA2	-10.91	125.05	130.95
1	A	63	GYC	O2-C2-CA2	-10.42	125.32	130.95
1	D	63	GYC	O2-C2-CA2	-9.81	125.65	130.95
1	B	63	GYC	CG2-CB2-CA2	-6.31	122.02	130.22
1	F	63	GYC	CG2-CB2-CA2	-6.16	122.22	130.22
1	A	63	GYC	CG2-CB2-CA2	-5.84	122.63	130.22
1	D	63	GYC	CG2-CB2-CA2	-5.58	122.97	130.22
1	E	63	GYC	CG2-CB2-CA2	-4.90	123.85	130.22
1	C	63	GYC	CG2-CB2-CA2	-4.88	123.88	130.22
1	F	63	GYC	CB2-CA2-N2	-2.45	124.28	128.67
1	A	63	GYC	N3-C1-N2	-2.31	109.77	111.56
1	D	63	GYC	N3-C1-N2	-2.21	109.85	111.56
1	D	63	GYC	C2-CA2-N2	-2.19	107.16	108.91
1	D	63	GYC	CB2-CA2-N2	-2.08	124.96	128.67
1	F	63	GYC	C2-CA2-N2	-2.04	107.28	108.91
1	E	63	GYC	C2-CA2-N2	-2.03	107.29	108.91
1	D	63	GYC	CA1-C1-N2	2.18	128.10	123.38
1	A	63	GYC	CB1-CA1-C1	2.33	114.06	110.12
1	F	63	GYC	CA3-N3-C1	2.49	130.25	127.36
1	B	63	GYC	CB2-CA2-C2	2.58	126.14	122.36
1	C	63	GYC	CB2-CA2-C2	2.83	126.50	122.36
1	A	63	GYC	CB2-CA2-C2	3.07	126.85	122.36
1	A	63	GYC	CA3-N3-C1	3.15	131.01	127.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	63	GYC	CB2-CA2-C2	3.53	127.52	122.36
1	D	63	GYC	CB2-CA2-C2	3.67	127.72	122.36
1	F	63	GYC	CB2-CA2-C2	4.02	128.24	122.36
1	A	63	GYC	CA2-C2-N3	15.06	110.95	103.40
1	D	63	GYC	CA2-C2-N3	15.07	110.95	103.40
1	E	63	GYC	CA2-C2-N3	15.46	111.15	103.40
1	C	63	GYC	CA2-C2-N3	15.47	111.15	103.40
1	F	63	GYC	CA2-C2-N3	15.50	111.17	103.40
1	B	63	GYC	CA2-C2-N3	15.51	111.17	103.40

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	63	GYC	5	0
1	B	63	GYC	4	0
1	C	63	GYC	6	0
1	D	63	GYC	2	0
1	E	63	GYC	5	0
1	F	63	GYC	3	0

5.5 Carbohydrates (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	213/221 (96%)	-0.35	0 100 100	9, 19, 37, 51	0
1	B	213/221 (96%)	-0.19	1 (0%) 91 94	12, 23, 41, 62	0
1	C	215/221 (97%)	-0.26	4 (1%) 70 76	10, 20, 38, 67	0
1	D	213/221 (96%)	-0.16	3 (1%) 78 83	11, 21, 39, 62	0
1	E	213/221 (96%)	-0.04	3 (1%) 78 83	12, 25, 43, 71	0
1	F	213/221 (96%)	-0.16	1 (0%) 91 94	11, 23, 39, 57	0
All	All	1280/1326 (96%)	-0.19	12 (0%) 85 89	9, 22, 40, 71	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	3	VAL	5.4
1	E	3	VAL	4.7
1	C	2	SER	4.6
1	E	2	SER	3.8
1	B	2	SER	3.6
1	D	2	SER	3.3
1	D	3	VAL	2.8
1	E	4	ILE	2.3
1	F	202	LYS	2.3
1	D	6	PRO	2.3
1	C	6	PRO	2.2
1	C	4	ILE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains.

The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å^2)	Q<0.9
1	GYC	D	63	21/22	0.93	0.15	-	20,29,42,48	0
1	GYC	C	63	21/22	0.93	0.13	-	15,30,41,44	0
1	GYC	B	63	21/22	0.94	0.13	-	20,25,41,47	0
1	GYC	A	63	21/22	0.95	0.13	-	11,24,37,39	0
1	GYC	F	63	21/22	0.94	0.15	-	12,31,39,45	0
1	GYC	E	63	21/22	0.92	0.14	-	23,33,48,54	0

6.3 Carbohydrates (i)

There are no carbohydrates in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.